What is claimed is:

1. A method of determining block formats to be used to transmit from a transmitter to a receiver a series of blocks of data over a channel subject to fading, the method comprising:

collecting a series of measurements of a reception-quality of blocks of data transmitted over the channel from the transmitter to the receiver;

determining a measure of the rate of change of the reception-quality of blocks of data transmitted over the channel from the transmitter to the receiver; and

if the measure of the rate of change indicates that measurements of reception-quality cannot be obtained and provided to the transmitter fast enough so that each measurement is a reasonably accurate estimate of the reception-quality at which the receiver will receive a block of the series of blocks about to be transmitted, then determining an average of at least a portion of the series of reception-quality measurements and, based upon that average, determining a block format to be used for each of the series of blocks to be transmitted, but otherwise determining a block format for each block of the series of blocks to be transmitted based upon the most recent reception-quality measurement available to the transmitter at the time that that block is being prepared to be transmitted.

2. A method of determining block formats to be used to transmit blocks of data from a transmitter to a receiver over a channel subject to fading, the method comprising:

monitoring a measure of the rate of change of the reception-quality for blocks of data transmitted over the channel from the transmitter to the receiver; and

alternating between determining a block format for the next block to be transmitted

(a) using the most recent reception-quality measurement available to the transmitter at the time that next block is about to be transmitted,

and, for a series of blocks to be transmitted,

(b) using measurements of reception-quality of a previous series of blocks of data transmitted over the channel from the transmitter to the receiver to determine an average of a portion of the

reception-quality measurements and, based upon that average, determining a block format to be used for the blocks in the series of blocks to be transmitted,

such that (a) is used when the measure of the rate of change indicates that measurements of reception-quality can be obtained and provided to the transmitter fast enough so that each measurement is a reasonably accurate estimate of the reception-quality at which the receiver will receive the next block to be transmitted and (b) is used otherwise.

3. The method of claim 2, wherein the measure of the rate of change of the reception-quality of blocks of data transmitted over the channel from the transmitter to the receiver is determined periodically, but with a different period or phase than measurements of reception-quality of series of blocks of data transmitted over the channel from the transmitter to the receiver are collected.

4. A method of determining block formats to be used to transmit blocks of data from a base station to a subscriber station over a channel subject to fading, the method comprising:

monitoring a measure of the rate of change of a reception-quality of data received over the channel by the subscriber station from the base station;

measuring the reception-quality of each frame of data received over the channel by the subscriber station from the base station and mapping each reception-quality measurement to a set of transmit-control bits using a quantization mapping;

transmitting each set of transmit-control bits from the subscriber station to the base station in a slotted frame of data, each transmit-control bit carried in a discrete slot; and

alternating between

(a) determining a block format for the next block to be transmitted by the base station to the subscriber station using the most recently received set of transmit-control bits and the quantization mapping, and

(b) determining a block format for the next block to be transmitted by the base station to the subscriber station using an average of a portion of the reception-quality measurements for frames of data received over the channel by the subscriber station from the base station,

such that (a) is used when the measure of the rate of change indicates that measurements of reception-quality can be obtained and provided to the base station fast enough so that each measurement is a reasonably accurate estimate of the reception-quality at which the subscriber station will receive the next block to be transmitted and (b) is used otherwise.

5. The method of claim 4, wherein the reception-quality measurements to be used to determine the average are sorted into portions by magnitude and one of the portions so determined is used to determine the average.

6. The method of claim 5, wherein the sorted portion used to determine the average is the portion having the lowest magnitudes.

7. The method of any of claims 1 - 6, wherein the measure of the rate of change of the reception-quality is determined from a sequence of reception-quality measurements.

8. The method of claim 7, wherein the measure of the rate of change of the reception-quality is determined by finding the frequency spectrum of a sequence of reception-quality measurements.

9. The method of any of claims 1 - 8, wherein the measure of the rate of change of the reception-quality is determined from the rate at which the receiver is requesting retransmissions over the channel from the transmitter.

10. A method of determining block formats to be used to transmit blocks of data from a base station to a subscriber station over a channel subject to fading, the method comprising:

at the subscriber station,

measuring a reception-quality of a frame of data received over the channel by the subscriber station from the base station, and

mapping the reception-quality measurement to a set of transmit-control bits using a quantization mapping;

transmitting the set of transmit-control bits to the base station in a slotted frame of data, each transmit-control bit carried in a discrete slot; and

at the base station, using the set of transmit-control bits and the quantization mapping to determine a block format for the next block to be transmitted to the subscriber station.

11. A method of determining block formats to be used to transmit blocks of data from a base station to a subscriber station over a channel subject to fading, the method comprising:

measuring a reception-quality for each frame of data received over the channel by the subscriber station from the base station;

periodically determining an average of at least a portion of the reception-quality measurements; and

either

using each reception-quality measurement to determine a block format for the next block to be transmitted to the subscriber station, or

under predetermined conditions, determining the block format for the next block to be transmitted based upon the last determined average.

12. The method of claim 11, additionally comprising:

mapping each reception-quality measurement to a set of transmit-control bits using a quantization mapping;

transmitting each set of transmit-control bits to the base station in a slotted frame of data, each transmit-control bit carried in a discrete slot; and

using the quantization mapping to determine a reception-quality measurement to be used to determine a block format for the next block to be transmitted to the subscriber station.

13. The method of either of claims 10 or 12, wherein there are five transmit-control bits in the set of transmit-control bits, four of which are quantized data bits and the fifth bit is a parity bit generated by XORing the four data bits together, and wherein the slotted frame has 15 slots.

14. The method of claim 13, wherein the five transmit-control bits in the set of transmit-control bits are distributed among the 15 slots of the frame in the following manner:

X/T/M0/M1/T/M2/M3/T/P4/X/T/X/X/T/X,

in which slashes delimit slots, T represents a transmit power control bit used to control the power used by the base station to transmit a dedicated channel to the subscriber station, M0-M3 represent the quantized data bits, P4 represents the parity bit, and X represents a reserved bit.

15. A method of determining a block format to be used to transmit a series of blocks of data over a channel subject to fading from a transmitter to a receiver, the method comprising:

collecting a series of measurements of a reception-quality of blocks of data transmitted over the channel from the transmitter to the receiver;

determining an average of at least a portion of the series of reception-quality measurements; and

determining the block format for each of the series of blocks to be transmitted based upon the average.

16. The method of one of claims 1-6, 11, 12, and 15, wherein the reception-quality measurements to be used to determine an average are sorted into portions by reception-quality and one of the portions so determined is used to determine the average.

17. The method of claim 16, wherein the sorted portion used to determine the average is the portion having the lowest reception-qualities.

18. The method of any of claims 1 to 17, wherein the reception-quality measured is signal to interference ratio.

19. A data signal embodied in a carrier wave, the signal comprising a set of transmit-control bits each bit carried in a discrete slot of a slotted frame of data transmitted on a dedicated channel from a subscriber station to a base station, the transmit-control bits together representing a quantized measurement of reception-quality measured at the subscriber station of a frame of data transmitted by the base station.

20. The data signal of claim 19, wherein the set of transmit-control bits includes four data bits and a parity bit generated by XORing the four data bits together and is carried in a frame having 15 slots.

21. The data signal of claim 20, wherein the set of transmit-control bits are distributed among the

15 slots of the frame in the following manner:

X/T/M0/M1/T/M2/M3/T/P4/X/T/X/X/T/X,

in which slashes delimit slots, T represents a transmit power control bit used to control the power used by the base station to transmit a dedicated channel to the subscriber station, M0-M3 represent the quantized data bits, P4 represents the parity bit, and X represents a reserved bit.

22. A subscriber station having a microprocessor, a modem, a radio and an antenna, and operable to receive data from a base station over a shared channel and transmit data to the base station over a dedicated channel, the subscriber station configured to measure a reception-quality of each frame of data received over the shared channel from the base station, map the reception-quality measurement to a set of transmit-control bits using a quantization mapping, and transmit the set of transmit-control bits to the base station in a slotted frame of data, each transmit-control bit carried in a discrete slot.

23. The subscriber station of claim 22, wherein there are five transmit-control bits in the set of transmit-control bits, four of which are quantized data bits and the fifth bit of which is a parity bit generated by XORing the four data bits together.

24. The subscriber station of claim 23, wherein the frame has 15 slots and the five transmit-control bits in the set of transmit-control bits are distributed among the slots of the frame in the following manner:

X/T/M0/M1/T/M2/M3/T/P4/X/T/X/X/T/X,

in which slashes delimit slots, T represents a transmit power control bit used to control the power used by the base station to transmit a dedicated channel to the subscriber station, M0-M3 represent the quantized data bits, P4 represents the parity bit, and X represents a reserved bit.

25. A subscriber station having a microprocessor, a modem, a radio and an antenna, and operable to receive data from a base station over a shared channel and transmit data to the base station over a dedicated channel, the subscriber station configured to measure a reception-quality of each frame of data received over the shared channel from the base station and to periodically transmit an average of a portion of a series of such reception-quality measurements to the base station.

26. The subscriber station of claim 25, wherein each average transmitted to the base station is determined by accumulating a plurality of reception-quality measurements, sorting the accumulated measurements into a list by magnitude, separating the sorted measurements into groups by position in the list, and averaging the measurements in one of the groups.

27. The subscriber station of claim 26, wherein the average transmitted to the base station is the average of the measurements in the group having the lowest reception-quality.

28. A subscriber station having a microprocessor, a modem, a radio and an antenna, and operable to receive data from a base station over a shared channel and transmit data to the base station over a dedicated channel, the subscriber station configured to measure a reception-quality of each frame of data received over the shared channel from the base station and to both:

(a) periodically transmit an average of a portion of a series of such reception-quality measurements to the base station; and

(b) map each reception-quality measurement to a set of transmit-control bits using a quantization mapping and transmit the set of transmit-control bits to the base station in a slotted frame of data, each transmit-control bit carried in a discrete slot.

29. The subscriber station of claim 28, wherein there are five transmit-control bits in the set of transmit-control bits, four of which are quantized data bits and the fifth bit of which is a parity bit generated by XORing the four data bits together.

30. The subscriber station of claim 29, wherein the frame has 15 slots and the five transmit-control bits in the set of transmit-control bits are distributed among the slots of the frame in the following manner:

X/T/M0/M1/T/M2/M3/T/P4/X/T/X/X/T/X,

in which slashes delimit slots, T represents a transmit power control bit used to control the power used by the base station to transmit a dedicated channel to the subscriber station, M0-M3 represent the quantized data bits, P4 represents the parity bit, and X represents a reserved bit.

31. The subscriber station of any of claims 28-30, wherein each average transmitted to the base

station is determined by accumulating a plurality of reception-quality measurements, sorting the accumulated measurements into a list by magnitude, separating the sorted measurements into groups by position in the list, and averaging the measurements in one of the groups.

32. The subscriber station of claim 31, wherein the average transmitted to the base station is the average of the measurements in the group having the lowest reception-quality.

33. The subscriber station of any of claims 25 to 32, wherein the reception-quality measured is signal to interference ratio.

34. A base station having a microprocessor, a modem, a radio and an antenna, and operable to transmit data to a plurality of subscriber stations over a shared channel and receive data from a subscriber station over a dedicated channel, the base station configured to receive from the subscriber station both:

(a) a periodically transmitted average of a portion of a series of measurements of a reception-quality of each frame of data received over the shared channel by the subscriber station; and

(b) over the dedicated channel, slotted frames of data, each frame carrying a set of transmit-control bits corresponding to a reception-quality measurement of a different frame of data received over the shared channel by the subscriber station, the set of transmit-control bits determined using a quantization mapping, each transmit-control bit carried in a discrete slot.

35. The base station of claim 34, wherein there are five transmit-control bits in the set of transmit-control bits, four of which are quantized data bits and the fifth bit of which is a parity bit generated by XORing the four data bits together.

36. The base station of claim 35, wherein the frame received from the subscriber station have 15 slots and the five transmit-control bits in the set of transmit-control bits are distributed among the slots of the frame in the following manner:

X/T/M0/M1/T/M2/M3/T/P4/X/T/X/X/T/X,

in which slashes delimit slots, T represents a transmit power control bit used to control the power used by the base station to transmit a dedicated channel to the subscriber station, M0-M3 represent the

quantized data bits, P4 represents the parity bit, and X represents a reserved bit.

37. The base station of any of claims 34-36, wherein each average transmitted to the base station is determined by accumulating a plurality of reception-quality measurements, sorting the accumulated measurements into a list by magnitude, separating the sorted measurements into groups by position in the list, and averaging the measurements in one of the groups.

38. The base station of claim 37, wherein the average transmitted to the base station is the average of the measurements in the group having the lowest reception-quality.

39. The base station of any of claims 34 to 38, wherein the reception-quality measured is signal to interference ratio.

40. A system for transmitting data over a shared channel, comprising a base station as claimed in any of claims 34-39 and at least one subscriber station as claimed in any of claims 22-33.